method) is disclosed in for example, patent literature 1.

[0008]

In the refrigerant natural circulation cooling method disclosed in patent literature 1, heat exhausted from the electronic apparatus mounted in a server rack 26 is transported to an evaporator 34 mounted on a rack back face via refrigerant. The heat that is exhausted from the electronic apparatus and transported to the evaporator 34 is consumed as the vaporization heat when the phase of the refrigerant changes from liquid to vapor and the heat is transported to cooling towers 38 and 76 located outside the building. As a result, the temperature of the server room can be reduced. Further, a flexible vapor pipe 78 and a flexible liquid pipe 80 are connected to the evaporator 34. The vapor pipe 78 is provided to transport vapor. The liquid pipe 80 is provided to transport liquid.

[Citation List]

[Patent Literature]

[0009]

[PTL 1] Japanese Patent Application Laid-Open No. 2011-165707

[Summary]

[Technical Problem]

[0010]

However, in the technology described in patent literature 1, after a refrigerant natural circulation cooling system is conveyed or transported or after a process for evacuating the air in the evaporator 34 is performed for maintenance work or the like, the refrigerant natural circulation cooling system has the following problems at an initial stage of the operation of the cooling system.

[0011]

38 and 76 to the evaporator 34 through the liquid pipe 80. In the evaporator 34, the refrigerant liquid is supplied to a plurality of heat receiving portions in order from the uppermost one to the lowermost one in the vertical direction of the server rack 26. Therefore, the refrigerant accumulated in the heat receiving portion located in a vertically lower part of the server rack 26 at the initial state stage of the operation of the cooling system is equally distributed to a plurality of the heat receiving portions over time. At this time, a plurality of the heat receiving portions can receive the heat exhausted from the electronic apparatus from the whole back face of the server rack 26 in a vertical (upper and lower) direction. As a result, a maximum amount of heat exhausted from the electronic apparatus can be transported to the cooling towers 38 and 76. However, because the accumulated liquid exists in the vapor pipe 78, the flow of the vapor flowing upward is blocked by the accumulated liquid. As a result, the refrigerant is slowly circulated and it takes much time until all the heat receiving portions work properly.

[0018]

Various embodiments are made in view of the above mentioned situation and an object of the present invention is to provide a technology in which refrigerant can be efficiently transported in a short time.

[0018a]

According to an aspect, an electronic apparatus enclosure device is provided including a rack configured to accommodate an electronic apparatus having a heat-producing component,

a plurality of heat receiving portions arranged on a back face of the rack along a vertical direction and configured to receive heat of the

electronic apparatus,

a vapor pipe configured to connect a heat dissipation portion for dissipating the heat of the electronic apparatus that is received by each of a plurality of the heat receiving portions and each of a plurality of the heat receiving portions,

a liquid pipe configured to connect the heat dissipation portion and each of a plurality of the heat receiving portions,

a bypass pipe configured to connect the vapor pipe and the liquid pipe,

a valve configured to open and close a flow path of the bypass pipe,

a first connection portion configured to connect the vapor pipe and the bypass pipe, and

a second connection portion configured to connect the liquid pipe and the bypass pipe, wherein

the first connection portion is disposed at a position higher than that of the second connection portion.

[0019]

An electronic apparatus enclosure device includes a rack which accommodates an electronic apparatus having a heat-producing component, a plurality of heat receiving portions which are arranged on a back face of the rack along a vertical direction and receive heat of the electronic apparatus, a heat dissipation portion which dissipates the heat of the electronic apparatus that is received by each of a plurality

of the heat receiving portions, a vapor pipe connected to each of a plurality of the heat receiving portions, a liquid pipe which connects the heat dissipation portion and each of a plurality of the heat receiving portions, a bypass pipe which connects the vapor pipe and the liquid pipe, a valve which opens and closes a flow path of the bypass pipe, a first connection portion which connects the vapor pipe and the bypass pipe, and a second connection portion which connects the liquid pipe and the bypass pipe, wherein the first connection portion is disposed at a position higher than that of the second connection portion.

[0020]

An electronic apparatus cooling system includes a rack which accommodates an electronic apparatus having a heat-producing component, a plurality of heat receiving portions which are arranged on a back face of the rack along a vertical direction and receive heat of the electronic apparatus, a heat dissipation portion which dissipates the heat of the electronic apparatus that is received by each of a plurality of the heat receiving portions, a vapor pipe which connects the heat dissipation portion and each of a plurality of the heat receiving portions, a liquid pipe which connects the heat dissipation portion and each of a plurality of the heat receiving portions, a bypass pipe which connects the vapor pipe and the liquid pipe, a valve which opens and closes a flow path of the bypass pipe, a first connection portion which connects the vapor pipe and the bypass pipe, and a second connection portion which connects the liquid pipe and the bypass pipe, wherein the first connection portion is disposed at a position higher than that of the second connection portion.

[0021]

By using the electronic apparatus enclosure device and the